



## MINHERS Addendum 46

### Update Chapter 6 RESNET NATIONAL STANDARD FOR SAMPLED RATINGS

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<b>Proponent:</b>	SDC 900
<b>Organization:</b>	RESNET

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**Purpose:**

To update the sampling requirements for Sampled Ratings.

**Amendment:**

*Revise the Sections of the MINHERS as follows*

#### Chapter 6- RESNET NATIONAL STANDARD FOR SAMPLED RATINGS

~~601 General Provisions~~

## Purpose

~~Sampling is intended to provide certification that a group of new homes meets a particular threshold such as ENERGY STAR®, energy code compliance, or qualification for an energy efficiency lending program. It is based on pre-analysis of building plans meeting the intended qualification (e.g. a HERS Index threshold), and subsequent random testing and inspections of a sample set of the homes as-built. Certifying a group of homes by sampling entitles the customer to documentation certifying that the homes meet the desired threshold; it does not constitute a confirmed HERS rating on any home.~~

## Scope

~~This chapter sets out the procedures for the accreditation of Sampling Providers. Accredited Sampling Providers shall assume all warranties and liabilities associated with the sampling of homes. RESNET does not provide any warranty, either explicit or implied, that sampled homes will meet or exceed the threshold specifications for the sample set. There may be instances in which state laws or regulations differ from these Standards. In such instances, state law or regulation shall take precedence over this standard.~~

## Definitions and Acronyms

~~See [Appendix B – Glossary of Terms](#).~~

## 602 Technical Requirements for Sampling

### Compliance Requirements

~~The testing and inspection of homes for minimum rated features shall be conducted in compliance with the procedures for conducting home energy ratings contained in this Standard.~~

### Homes Eligible to be Sampled

~~The homes being sampled shall be of the same construction type using the same envelope systems.~~

### Analysis of Homes

~~A Worst-Case Analysis shall be performed on each home plan in the sample set. If an option or change in the design of the structure is made that differs from those used in the initial analysis in a way that would require more stringent threshold specifications, then that home must be individually rated. At a minimum, a certified Rater shall oversee this process.~~

### Labeling of Homes

~~Every home within a given sample set shall be assigned the HERS Index Score as determined by the worstcase analysis and threshold specification for the floor plan for that home.~~

~~Every home subjected to this sampling Standard shall be provided with a label in accordance with [Section 303](#) of these standards, which contains the following statement: “This home has been certified using a sampling protocol in accordance with [Chapter 6](#) of the RESNET Standards (see <http://www.resnet.us>). This label shall be located on the electrical panel and the font shall be a minimum of 10 points.~~

## ~~Sample Set of Homes~~

~~Sampling controls may be applied to any sample set of homes within the same subdivision, community or metropolitan area and climate zone (as specified in the most current edition of the IECC), provided the criteria in Item [602.2](#) are met and:~~

~~Each sample set is made up of homes at the same stage of construction (e.g. pre-drywall, final);~~

~~For each stage of construction, each sample set will be composed of homes eligible for the applicable sampling controls within a 30-calendar day period. For example: a sample set that is defined for a pre-drywall inspection must include homes that are eligible for that pre-drywall inspection within a given 30-day period. If fewer than seven (7) homes are available for that phase of inspection, the sample set must be cut off at the number of homes that are available within that 30-day period. This sample set need not be carried through to final inspection; in fact, a whole new sample set may be defined for the final inspection phase based on the homes available for that phase within a new, 30-day period applied to that phase of tests and inspections.~~

~~Each home subject to sampling is required to be part of an identified set of sampling controls for each test or inspection that is sampled;~~

~~Each participating subdivision within a metropolitan area is subject to sampling controls on at least one home in any 90-calendar day period;~~

~~Each participating subdivision within a metropolitan area must start a minimum of one home in any 90-calendar day period.~~

## ~~Application of Sampling~~

~~The application of the sampling controls in this standard are only required for those tests and inspections that are not conducted on every home. Sampling controls shall be conducted for any tests and inspections not conducted on every home, according to the field testing and inspection requirements of [Chapter 8](#).~~

## ~~Sampling Controls~~

~~A complete set of Sampling Controls shall be performed at a minimum ratio of one (1) test or inspection per seven (7) homes within a given sample set. At a minimum, a certified Rater shall oversee this process.~~

~~Sampling Providers may complete the sampling controls collectively on a single home or distribute the tests and inspections across several homes within a given sample set, provided the total number of individual tests and inspections meets or exceeds the minimum ratio set forth in [602.7.1](#).~~

~~To qualify for sampling in a metropolitan area, a builder shall first complete, without any incidence of failure, a complete set of sampling controls on at least seven (7) consecutive homes in that metropolitan area. For this initial phase of testing and inspections, the complete set of sampling controls shall be performed on each of the seven (7) homes.~~

~~For each newly started subdivision, sampling may begin for each sampling control only after three (3) of a particular sampling control passes consecutively without any incidence of failure.~~

~~Having successfully met the requirements of [602.7.3](#), a Sampling Provider may complete sampling controls for a builder indefinitely until a “failure” occurs or any of the criteria set forth in [602.2](#) are no longer met.~~

~~A complete set of sampling controls, whether performed on a single home or spread across several homes, must be completed whether or not one or more failure(s) are found.~~

~~When an “initial failure” occurs, the failed item(s) shall be tested or inspected in two (2) additional homes selected from the same sample set. Testing and/or inspections for any item(s) that may become inaccessible during the construction process, (e.g. wall insulation) must be timed so additional testing and/or inspections can occur on other homes in the sample set before they become inaccessible for inspection or testing.~~

~~When an “additional failure” occurs, in one or more of the two (2) additional homes, the failed item(s) shall be tested or inspected in the remaining four (4) homes selected for the same sample set.~~

~~Until the failure is corrected in all identified (failed) homes in the sample set, none of the homes shall be deemed to meet the threshold or labeling criteria.~~

#### ~~Multiple “Additional Failures”~~

~~Action is required if three (3) “additional failures” occur within a ninety (90) calendar day period. The required action depends on whether those “additional failures” apply to the same failed item or various failed items.~~

~~If the multiple “additional failures” all apply to the same failed item, the builder shall submit to 100% inspection of that failed item, for a minimum of seven (7) homes, before resuming sampling of that item. Remaining unrelated sampling controls may be conducted on a sampled basis throughout this process.~~

~~Exception: If a builder conducts a “root cause analysis” on an item or items covered under [602.8.1](#) or [603.8.2](#), and submits it in writing to the sampling Provider, sampling may resume as soon as the Provider deems that the solution has been implemented. The “root cause analysis” report shall contain at a minimum:~~

~~A written description of the problem(s) covered by the analysis;~~

~~A written explanation of the underlying reason(s) that the problem(s) occurred (e.g. inadequate training of subcontractor(s) or site supervisors, insufficient information or inadequate detail in the plans or specifications, etc);~~

~~A written description of a clearly defined process to correct the underlying cause(s);~~

~~A written description of when and how that process has been carried out;~~

~~A copy of the root cause analysis report shall be kept by the sampling Provider as part of the QA file, for a period of time of three (3) years, consistent with the requirements of [102.1.4.9](#).~~

#### ~~Quality Assurance by Sampling Providers~~

~~The Sampling Provider's Rating Quality Assurance Provider QA Designee shall be responsible for monitoring compliance with the sampling process and maintaining records in accordance with the requirements of [Chapter 9](#).~~

## ~~603 Rating Sampling Provider Accreditation Criteria~~

### ~~Minimum Standards for Rating Sampling Provider (Sampling Provider)~~

~~Accreditation Sampling Providers shall be accredited in accordance with the Accreditation Process specified in [Chapter 9](#) of these Standards. A Sampling Provider must specifically meet the following minimum standards for Accreditation.~~

~~All Sampling Providers shall be accredited by RESNET as a QA Provider in good standing and shall maintain their accreditation in good standing.~~

~~A Sampling Provider's accreditation must be renewed annually by RESNET.~~

~~In order to be eligible to be a Sampling Provider, the RESNET accredited QA Provider shall complete a minimum of twenty-five (25) confirmed ratings as an accredited QA Provider that have been documented to be accurate by the QA Provider's Quality Assurance Designee.~~

~~The Sampling Provider shall demonstrate to RESNET a minimum insurance coverage of \$1,000,000 in general liability coverage and \$1,000,000 in professional liability coverage.~~

~~Builders cannot use the sampling standard to certify or qualify homes in which they have a financial interest.~~

### ~~Responsibilities of Accredited Sampling Providers~~

~~Sampling Providers are responsible for ensuring that all of the Sampling inspections conducted and issued by their sampling program are in compliance with all of the criteria by which the system was accredited.~~

~~Sampling Providers are responsible for ensuring that the specifications for the minimum rated features for the sampled homes be communicated to the personnel or trades responsible for completing the work.~~

~~Minimum Standards For Sampling Provider's Operation Policies and Procedures must be written and provide for the following:~~

~~Field inspections and tracking of all homes in the sample set for verifying threshold technical specifications and tracking failures and re-inspections;~~

~~Blower Door Testing completed for sample sets in which the threshold specifications include credit for reduced air infiltration lower than the default value;~~

~~Duct testing completed for sample sets in which the threshold specifications include credit for reduced air distribution system leakage lower than the default value;~~

~~Sampling Inspector discipline procedures that include progressive discipline involving Probation —Suspension—Termination.~~

## 600 General Provisions

### 600.1 Purpose

Sampling is intended to provide verification that a group of Dwelling Units (single-family homes or Dwelling Units within multifamily projects) meet a particular Threshold such as ENERGY STAR®, energy code compliance, or qualification for an energy efficiency lending program. It is based on Threshold Specifications and subsequent testing and inspections of a subset of Dwelling Units. Verifying a group of Dwelling Units by Sampling entitles the customer to documentation that the Dwelling Units meet the desired Threshold. Sampling does not constitute a Confirmed HERS Rating on any Dwelling Unit.

### 600.2 Scope

This standard establishes the procedures for energy modeling, labeling, inspections, testing, quality assurance by Sampling Providers, and Sampling Provider Accreditation criteria as they pertain to Sampling. The procedures described in this chapter are applicable to the following Dwelling Units:

- (a) single family homes (attached and detached)
- (b) units within a multifamily building or within multiple buildings.

This standard does not provide any warranty, either explicit or implied, that Sampled Dwelling Units will meet or exceed the Threshold Specifications for the Sample Set. There may be instances in which local laws or regulations differ from these Standards. In such instances, local law or regulation shall take precedence over this standard.

### 601 Eligibility

The construction of the Minimum Rated Features for which Sampling will be applied shall be the responsibility of one builder or developer during the entire time of construction. Sampling Verifications shall be the responsibility of a Rater under the guidance of a Sampling Provider and may only be applied to any projects within the same Community.

### 602 Records Maintenance

The HERS Rater must document that the project met the requirements for Sampling and that each step in the Sampling process was met. This Documentation shall be kept for a minimum of three years. Examples of required documentation include but are not limited to; a copy of the Sampling Plan, inspection checklist(s), and Failure report(s).

Each inspection and/or test for each instance of each Sampled Feature shall have the following information recorded:

- (a) Date,
- (b) Dwelling Unit Address,
- (c) Sampled Feature, and
- (d) The Threshold Specification value and conformance with or Failure to meet it.

### 603 Sampling Plan

The HERS Rater shall develop a Sampling Plan prior to commencing Sampling. Any changes to the Sampling Plan shall be recorded as such and must comply with Sampling Plan Change requirements. Sampling shall be applied, but not limited, to any individual Minimum Rated Feature within Dwelling Units.

RESNET must be notified by the Provider of all Sampled Projects prior to conducting the initial Qualification Set. RESNET staff shall specify the process for reporting. RESNET need not be notified of subsequent Qualification Sets on the same project. At minimum this shall include (1), (2), (3), and (4) from the Sampling Plan.

#### 603.1 Required information for Sampling Plan

##### Mandatory

1. Sampled Project name
2. Sampled Project location
3. Sampled Project projected dates of construction
4. Total number of Dwelling Units, and for multifamily buildings, the number of Dwelling Units in each building

##### Optional:

5. List of all Sampled Features and Threshold Specifications
6. Home builder or general contractor's primary contact for Sampling; and HERS Rater contact information.

To have the option to remove Dwelling Units from the Sampling process and label as Confirmed Ratings, the Rater shall include 100% pre-drywall inspections in the Sampling Plan.

#### 603.2 Sampling Plan Changes

The Sampling Plan shall be adjusted when the following changes are made to the Sampled Project. The list of all Sampled Features and Threshold Specifications in the Sampling Plan shall be amended as needed to reflect adjustments and additions.

##### 603.2.1 Adjustments to Threshold Specifications

The Threshold Specification for a Sampled Feature is permitted to be adjusted at any point during the application of Sampling, including during the Qualification Set for the Sampled Project.

##### 603.2.2 Addition of a Sampled Feature

A Sampled Feature is permitted to be added to the Sampled Project at any point during the application of Sampling. Any feature added must comply with the Qualification Set requirements and the Sampling Verification Process.

##### 603.2.3 Removal of Dwelling Units from the Sampling process to be labeled as Confirmed Ratings

The Sampling Plan shall be adjusted to document the Dwelling Units that were removed from the Sampling Plan.

If it is determined that Dwelling Units are to be removed from the Sampling process and 100% Pre-Drywall inspections were not completed, the 20% Sampling rate must be increased by a percentage equal to or greater than the projected percentage of units that may be removed as confirmed. Example: If X% is projected to be removed as Confirmed Ratings, then the Sampling rate shall be increased to 20%+X%. AND

Only units that have 100% of Minimum Rated Features verified can be labeled as Confirmed Ratings. The removed Dwelling Units shall be labeled as Confirmed. All remaining Dwelling Units in the Project shall be labeled as Sampled.

## 604 Energy Modeling

Dwelling Units shall be grouped for modeling purposes. At a minimum, all units within a group shall have the same number of bedrooms and conditioned floor area within 10 percent of one another (+/- 10%). For example, a group may contain only units with a given floor plan, or it may be a group of different floor plans assuming they all have the same number of bedrooms and are within +/-10% conditioned floor area. The Rater shall document which units are within each modeling group. Dwelling Units that satisfy these criteria, but differ in other criteria, are not required to be modeled as the same unit type.

A Worst-Case Analysis shall be performed to determine the model with the worst-case HERS Index for the group. The Worst-Case Analysis on a given group shall consider all variations in Minimum Rated Features and Threshold Specifications and shall also consider requirements of any relevant EEP. Every Dwelling Unit shall be assigned the HERS Index Score as determined by the worst-case analysis for the corresponding group.

If changes or adjustments are made to a Threshold Specification, the worst-case model must be updated accordingly and must still represent the worst-case analysis of all units within that group.

All units within a Sampling Project must be uploaded to the RESNET Building Registry. Each Dwelling Unit shall have an energy model identical to the worst-case model from its associated modeling group that specifies the individual address for that unit. Actual onsite Sampled Verification results for Sampled Features shall not be entered in the final Sampled Rating energy model uploaded to the RESNET Buildings Registry. Minimum Rated Features that are not Sampled, shall not be updated in the model to reflect actual onsite verifications.

At a minimum, a certified Rater shall oversee this process.

## 605 Labeling

### 605.1 Single Family

All reports generated by an Approved Software Rating Tool for units within Sampled projects shall, at a minimum, contain the statement: "This home has been verified using the Sampling protocol specified in Chapter 6 of the RESNET Standards (see [www.resnet.us](http://www.resnet.us))."

### 605.2 Multifamily

#### Unit Label

All reports generated by an Approved Software Rating Tool for units within Sampled projects shall, at a minimum, contain the following statement: "This Dwelling Unit has been verified using the Sampling protocol specified in Chapter 6 of the RESNET Standards (see [www.resnet.us](http://www.resnet.us))."

#### Building Label

If all reports generated by an Approved Software Rating Tool for Dwelling Units within a building are such that individual labels would be identical, each building (but not each Dwelling Units) shall, at a minimum, contain the following statement: "The residential Dwelling Units in this building have been verified using the Sampling protocol specified in Chapter 6 of the RESNET Standards (see [www.resnet.us](http://www.resnet.us))."



## 606 Procedures for Inspections and Testing

The Testing and inspection of Dwelling Units for Minimum Rated Features shall be conducted in compliance with the procedures for conducting home energy Ratings contained in the RESNET MINHERS Standards.

### 606.1 Sample Set

A group of Dwelling Units at the same stage of construction (e.g., pre-drywall, final) within a 90-day period that the Sampling rate is applied to.

For each stage of construction, each Sample Set shall be composed of Dwelling Units eligible for the applicable Sampling Verifications within a 90-calendar day period. For example: a Sample Set that is defined for a pre-drywall inspection must include Dwelling Units that are eligible for that pre-drywall inspection within a given 90-day period. If fewer than five (5) Dwelling Units are available for that phase of inspection, the Sample Set must be limited to the number of Dwelling Units that are available within that 90-day period. Sample Sets need not be the same across different Sampled Features. For example, one Sample Set may exist for a pre-drywall inspection and, at the Rater's discretion, a whole new Sample Set may be defined for the final inspection phase based on the Dwelling Units available for that phase within a new, 90-day period applied to that phase of tests and inspections.

Each Dwelling Unit subject to Sampling is required to be part of an identified Set of Sampling Verifications for each test or inspection that is Sampled.

### 606.2 Qualification Set

Sampling shall be conducted in accordance with the Sampling Plan.  
To qualify for Sampling a builder must complete a Qualification Set.

#### 606.2.1

A builder or developer shall complete and have verified the installation of a minimum of five (5) of each Sampled Feature prior to conducting a Qualification Set for each Sampled Feature.

#### 606.2.2

Any feature being Sampled must qualify for Sampling by being successfully verified to meet the Threshold Specification for five (5) consecutive Sampled Features. A Qualification Set shall be made up of more than five (5) Sampled Features if a Failure occurs while qualifying the Feature.

#### 606.2.3

Any feature that fails to meet the Threshold Specification shall be corrected and re-inspected and/or retested until it meets the Threshold Specification.

#### 606.2.4

Sampling shall begin only after the Threshold Specifications have been verified in five (5) consecutive Dwelling Units without any incidence of Failure.

#### 606.2.5

Each Sampled Feature shall qualify for Sampling independently of the other Sampled Features. The Qualification Set, and any Dwelling Units tested prior to the Qualification Set, are not part of a Sampling Set and shall not count toward the minimum quantity of Sampling Verifications required.

## 607 Sampling Verification Process

### 607.1

A complete set of Sampling Verifications shall be performed at a minimum rate of twenty percent (20%) within a given Sample Set. At a minimum, a Certified Rater shall oversee this process.

The minimum quantity of Sampling Verifications for each Sampled Feature within a Sampled Set shall be calculated by multiplying the number of Sampled Features by 20% and rounding the result up to the nearest whole number.<sup>1</sup> (Projects containing less than 12 Sampled Features would not benefit from the Sampling process.)

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<sup>1</sup> For example, consider a 100-unit Sampled Project. The minimum quantity of Verifications for a given Sampled Feature is  $100 - 10$  (Qualification Set) = 90, then  $90 * 0.2 = 18$ . Note: Qualification Set number may vary depending on Failures but always requires a minimum 5 completed + 5 consecutive without Failure.

<sup>6</sup> Representative selection includes but is not limited to location within a building or Community, unit type, exposure, orientation, unique options, changes in construction crews, etc.

Raters operating under a Sampling Provider may complete the Sampling Verifications collectively on a single Dwelling Unit or distribute the tests and inspections across several Dwelling Units within a given Sample Set, provided the total number of individual tests and inspections meets or exceeds 20%. All Sampled Features shall be verified, at least once, for each unit type.

The Rater shall select the instances (e.g., which duct systems will be tested) of Sampled Features (e.g., duct leakage) that are subject to Verification. The selected instances shall not be announced in advance. The instances that are selected for Verification shall be representative<sup>6</sup> of the total group of Sampled Features. Verifications shall be spread across the beginning, middle, and end of the installation timeline for each Sampled Feature.

Sample Sets that include multifamily buildings with five (5) units or more per building shall have a minimum of one unit verified per building.

A Sampled Feature that does not meet its Threshold Specification is a Failure. Sampling is permitted to continue for each Sampled Feature until a Failure occurs. All Failures shall be addressed according to the Procedures for Resolving Failures.

## 608 Procedure for Resolving Failures

### 608.1 Failures

When a Sampled Feature fails a Threshold Specification, Sampling of that Feature must stop.

All Failures shall be corrected and re-inspected and/or retested until they meet their Threshold Specifications.

At any time, a given Sampled Feature is permitted to be removed from Sampling and every remaining instance shall be verified.

## 608.2 Requalifying for Sampling

Once a Sampled Feature fails, it must requalify for Sampling by successfully being verified to meet the Threshold Specification for three (3) consecutive Sampled Features.

Once a Feature requalifies for Sampling, that Feature may continue being Sampled until a Failure occurs.

Additional Verifications performed as a result of Failures shall not count toward the required 20%.

## 608.3 Documenting Failures

The following items shall be documented and reported if required by program, code, or project representative. Failure reports must be maintained in the Raters records for 3 years.

- i. Failed Feature, date, location, and result
- ii. Date, location, and results of requalification for Sampling

## 609 Quality Assurance by Sampling Providers

The Sampling Provider's QA Designee shall be responsible for monitoring compliance with the Sampling process and maintaining records in accordance with the requirements of Chapter 9.

### 609.1 Sampling Provider Accreditation Criteria

Sampling Providers shall first be accredited by RESNET as a Rating Quality Assurance Provider in accordance with the Accreditation Process specified in Chapter 9 of these Standards and shall remain in good standing.

Additionally, an applicant to become a Sampling Provider must provide the following:

- Written policies and procedures explaining the Provider's Sampling process including Quality Assurance and data management processes
- Minimum insurance coverage of \$1,000,000 in general liability coverage and \$1,000,000 in professional liability coverage

After submitting an application to become a Sampling Provider, the applicant must successfully complete:

- RESNET Enhanced Review of Rating QA Provider, if not completed within 12 months prior to application submittal.
- RESNET QA Staff Orientation to Sampling

When all requirements have been satisfied, RESNET staff shall submit the completed application to the Accreditation Committee for approval.

The Sampling Provider's first annual QA review following accreditation shall be an additional Enhanced Review, which shall demonstrate compliance with the Sampling Provider's written policies and procedures and the requirements of this chapter.

## 610 Glossary of terms

**Attached Dwelling Unit** – See the definition in standard ANSI/RESNET/ICC 301 Standard for the Calculation and Labeling of the Energy Performance of Dwelling and Sleeping Units using an Energy Rating Index.

**Community** – A group of Dwelling Units within the same development, master plan, or multifamily project. A Community shall not include multiple municipalities unless the project is on one contiguous piece of land (excluding roads and streets) that spans a municipal border.

**Detached Dwelling Unit** – See the definition in standard ANSI/RESNET/ICC 301 Standard for the Calculation and Labeling of the Energy Performance of Dwelling and Sleeping Units using an Energy Rating Index.

**Failure** – A Sampled Feature that does not meet its Threshold Specification. (check ANSI definition)

**Qualification Set** – A group of five (5) instances of a single Sampled Feature that meets their Threshold Specification consecutively, without Failure or assistance, that occurs before that Sampled Feature is eligible for Sampling.

**Sampled Project** – A group of Dwelling Units (single family homes or multifamily Dwelling Units) to which Sampling is applied.

**Sample Set** – A specific group of Dwelling Units from which one or more individual Dwelling Units are randomly selected for Sampling Verifications.

**Sampling** – A process whereby fewer than 100% of the Dwelling Units are inspected, tested, or modeled to demonstrate compliance with a set of Threshold Specifications.

**Sampling Verifications** – A collection or set of required tests and inspections performed for a Sample Set of Dwelling Units in order to confirm that the Threshold Specifications have been met.

**Sampling Provider** – An entity, accredited through these standards, that oversees the Sampling process and issues the Sampling certifications that Dwelling Units meet a particular set of Threshold Specifications such as the ENERGY STAR® specifications adopted by the U.S. Environmental Protection Agency.

**Threshold Specification** – The specific pass/fail criterion for the inspection or testing of each Sampled Feature, which is based on a predetermined prescriptive or worst-case specification.